REMARKS

This amendment is in response to the Office Action dated September 7, 2007 (the "Office Action"). Claims 1, 7-8, 18-28, 30, 32-34 and 36-38 are pending in the application. Claims 1, 7-8, 18, 27 and 34 have been amended. No new matter has been added. Support for the claim amendments may be found in at least paragraphs 0043-0045 of the application.

Claims 1 and 8 are Allowable

The Office has rejected claims 1-3 and 8-12, at page 5 of the Office Action, under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 5,576,772 ("Kondo"). Claims 2-3 and 9-12 have been cancelled without prejudice or disclaimer. Applicants respectfully traverse the remainder of the rejections.

The cited portions of Kondo do not disclose the specific combination of claim 1. For example, the cited portions of Kondo fail to disclose determining a similarity of one of said reference macroblocks and a selected one of said at least one current macroblock based on calculated pixel units in said selected current macroblock and one of said reference macroblocks, wherein one calculated pixel unit is an average of two adjacent pixels, as recited in claim 1. Instead, the cited portions of Kondo describe a multi-stage approach for obtaining a motion vector, with the coarse stage evaluated for (4 pixel x 4 lines) blocks, an intermediary stage evaluated for (2x2) blocks, and the finest stage evaluated on a pixel by pixel basis. *See* Kondo, col. 6, line 60 – col. 7, line 6. Claim 1 states that one calculated pixel unit is the average of two adjacent pixels, in response to the suggestion of the Examiner on page 3 of the Office Action.

Further, the cited portions of Kondo fail to disclose determining a similarity by multiplying each calculated pixel unit in said current macroblock with a corresponding calculated pixel unit in one of said reference macroblocks resulting in a plurality of multiplying values and summing each of the plurality of multiplying values for each of the calculated pixel units in said selected current macroblock, as recited in claim 1. As noted on page 12 of the Office Action, "Kondo is silent on the use of multiplication." Therefore, the cited portions of Kondo do not disclose each and every element of claim 1.

The cited portions of Kondo do not disclose the specific combination of claim 8. For example, the cited portions of Kondo fail to disclose determining a similarity of one of said reference macroblocks and a selected one of said at least one current macroblock based on calculated pixel units in said selected current macroblock and one of said reference macroblocks, wherein one calculated pixel unit is an average of two adjacent pixels, as recited in claim 8. Instead, the cited portions of Kondo describe a multi-stage approach for obtaining a motion vector, with the coarse stage evaluated for (4 pixel x 4 lines) blocks, an intermediary stage evaluated for (2x2) blocks, and the finest stage evaluated on a pixel by pixel basis. *See* Kondo, col. 6, line 60 – col. 7, line 6. Claim 8 states that one calculated pixel unit is the average of two adjacent pixels, in response to the suggestion of the Examiner on page 3 of the Office Action.

Further, the cited portions of Kondo fail to disclose determining a similarity by multiplying each calculated pixel unit in said current macroblock and a corresponding calculated pixel unit in one of said reference macroblocks resulting in a plurality of multiplying values and summing each of the plurality of multiplying values for each of the calculated pixel units of said current macroblock, as recited in claim 8. As noted on page 12 of the Office Action, "Kondo is silent on the use of multiplication." Therefore, the cited portions of Kondo do not disclose each and every element of claim 8.

Claims 1, 8, 21-26, 34, and 36-38 are Allowable

The Office has rejected claims 1-3, 8-10, 21-26, 34, and 36-38 at page 7 of the Office Action, under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 6,011,870 ("Jeng"). Claims 2-3 and 9-10 have been cancelled without prejudice or disclaimer. Applicants respectfully traverse the remainder of the rejections.

The cited portions of Jeng do not disclose the specific combination of claim 1. For example, the cited portions of Jeng fail to disclose determining a similarity by multiplying each calculated pixel unit in said current macroblock with a corresponding calculated pixel unit in one of said reference macroblocks resulting in a plurality of multiplying values and summing each of the plurality of multiplying values for each of the calculated pixel units in said selected current macroblock, as recited in claim 1. As noted on page 12 of the Office Action, "Jeng is silent on

the use of multiplication." Therefore, the cited portions of Jeng do not disclose each and every element of claim 1.

Claims 21-23 depend from claim 1, which Applicants have shown to be allowable. Therefore, claims 21-23 are allowable, at least by virtue of their dependence from claim 1.

The cited portions of Jeng do not disclose the specific combination of claim 8. For example, the cited portions of Jeng fail to disclose determining a similarity by multiplying each calculated pixel unit in said current macroblock and a corresponding calculated pixel unit in one of said reference macroblocks resulting in a plurality of multiplying values and summing each of the plurality of multiplying values for each of the calculated pixel units of said current macroblock, as recited in claim 8. As noted on page 12 of the Office Action, "Jeng is silent on the use of multiplication." Therefore, the cited portions of Jeng do not disclose each and every element of claim 8.

Claims 24-26 depend from claim 8, which Applicants have shown to be allowable. Therefore, claims 24-26 are allowable, at least by virtue of their dependence from claim 8.

The cited portions of Jeng do not disclose the specific combination of claim 34. For example, the cited portions of Jeng fail to disclose multiplying each calculated pixel unit of said current macroblock by a corresponding calculated pixel unit of said one reference macroblock resulting in a plurality of multiplying values and summing the plurality of multiplying values resulting in a sum of correlations (SC), as recited in claim 34. As noted on page 12 of the Office Action, "Jeng is silent on the use of multiplication." Therefore, the cited portions of Jeng do not disclose each and every element of claim 34.

Claims 36-38 depend from claim 34, which Applicants have shown to be allowable. Therefore, claims 36-38 are allowable, at least by virtue of their dependence from claim 34.

Claims 27-28, 30 and 32-33 are Allowable

The Office has rejected claims 27-28 and 30-33, at page 11 of the Office Action, under 35 U.S.C. §103(a) as being unpatentable over Jeng. Claim 31 has been cancelled without prejudice or disclaimer. Applicants respectfully traverse the remainder of the rejections.

The cited portions of Jeng do not disclose or suggest the specific combination of claim 27. For example, the cited portions of Jeng fail to disclose or suggest a controller sending a difference between every calculated pixel unit of each of said reference macroblocks and a corresponding calculated pixel unit of said current macroblock and a least significant bit of a sum of every calculated pixel unit of each of said reference macroblocks and the corresponding calculated pixel unit of said current macroblock to said second motion estimation processor, as recited in claim 27. Instead, the cited portions of Jeng describe calculating a signal 100 by combining adjacent pel pairs of motion vector values associated with each horizontally-neighboring pel pair. Therefore, the cited portions of Jeng do not disclose or suggest each and every element of claim 27.

Claims 28, 30 and 32-33 depend from claim 27, which Applicants have shown to be allowable. Therefore, claims 28, 30 and 32-33 are allowable, at least by virtue of their dependence from claim 27.

Claims 7 and 18-20 are Allowable

The Office has rejected claims 6, 7, and 17-20, at page 11 of the Office Action, under 35 U.S.C. §103(a) as being unpatentable over Kondo in view of U.S. Patent No. 6,442,203 ("Demos"). Further, the Office has rejected claims 6, 7, and 17-20, at page 12 of the Office Action, under 35 U.S.C. §103(a) as being unpatentable over Jeng in view of Demos. Claims 6 and 17 have been cancelled without prejudice or disclaimer. Applicants respectfully traverse the remainder of the rejections.

Claim 7 is allowable, at least by virtue of its dependence from claim 1. In addition, claim 7 recites additional features not disclosed or suggested by the cited portions of Kondo, Jeng and Demos.

For example, claim 7 discloses determining a motion estimation vector between said selected current macroblock and one of said reference macroblocks within said search range having a larger sum of said multiplying values than a sum of said multiplying values between said selected current macroblock and each other of said reference macroblocks within said search range. As noted above, "Kondo is silent on the use of multiplication." *See* Office Action, page 12. Additionally, as noted above, "Jeng is silent on the use of multiplication." *See* Office

Action, page 12. Therefore, the cited portions of Kondo and Jeng fail to disclose or suggest determining a motion estimation vector between said selected current macroblock and one of said reference macroblocks within said search range having a larger sum of said multiplying values than a sum of said multiplying values between said selected current macroblock and each other of said reference macroblocks within said search range, as recited in claim 7.

In contrast to claim 7, the cited portions of Demos describe the multiplication of pixels of two images to remove a constant component (DC) bias in finding an object location in a previous or subsequent frame. *See* Demos, col. 12, 28-col. 13, line 47. However, the cited portions of Demos fail to disclose or suggest determining a motion estimation vector between said selected current macroblock and one of said reference macroblocks within said search range having a larger sum of said multiplying values than a sum of said multiplying values between said selected current macroblock and each other of said reference macroblocks within said search range, as recited in claim 7. Therefore, the cited portions of Kondo, Jeng and Demos, individually or in combination, fail to disclose or suggest each and every element of claim 7. For these additional reasons, claim 7 is also allowable.

Claims 18-20 are allowable, at least by virtue of their dependence from claim 8. In addition, claims 18-20 recite additional features not disclosed or suggested by the cited portions of Kondo, Jeng and Demos.

For example, claim 18 discloses determining a motion estimation vector between said current macroblock and one of said reference macroblocks within said first predetermined set of said reference macroblocks having a larger sum of said calculated multiplying values than a sum of said multiplying values between said selected current macroblock and each other of said reference macroblocks within said first predetermined set of said reference macroblocks. As noted above, "Kondo is silent on the use of multiplication." *See* Office Action, page 12. Additionally, as noted above, "Jeng is silent on the use of multiplication." *See* Office Action, page 12. Therefore, the cited portions of Kondo and Jeng fail to disclose or suggest determining a motion estimation vector between said current macroblock and one of said reference macroblocks within said first predetermined set of said reference macroblocks having a larger sum of said calculated multiplying values than a sum of said multiplying values between said

selected current macroblock and each other of said reference macroblocks within said first predetermined set of said reference macroblocks, as recited in claim 18.

In contrast to claim 18, the cited portions of Demos describe the multiplication of pixels of two images to remove a constant component (DC) bias in finding an object location in a previous or subsequent frame. *See* Demos, col. 12, 28-col. 13, line 47. However, the cited portions of Demos fail to disclose or suggest determining a motion estimation vector between said current macroblock and one of said reference macroblocks within said first predetermined set of said reference macroblocks having a larger sum of said calculated multiplying values than a sum of said multiplying values between said selected current macroblock and each other of said reference macroblocks within said first predetermined set of said reference macroblocks, as recited in claim 18. Therefore, the cited portions of Kondo, Jeng and Demos, individually or in combination, fail to disclose or suggest each and every element of claim 18. For these additional reasons, claim 18 is also allowable.

CONCLUSION

Applicants have pointed out specific features of the claims not disclosed, suggested, or rendered obvious by the references applied in the Office Action. Accordingly, Applicants respectfully request reconsideration and withdrawal of each of the rejections, as well as an indication of the allowability of each of the pending claims.
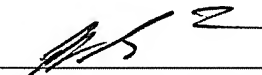
Any changes to the claims in this amendment, which have not been specifically noted to overcome a rejection based upon the cited art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

The Examiner is invited to contact the undersigned attorney at the telephone number listed below if such a call would in any way facilitate allowance of this application.

The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

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Date

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